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Assessing the Role of Institutional Quality in Digital Transformation at Foreign-Invested Enterprises in Ho Chi Minh City

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ABSTRACT

In the context of the transition to a digital economy is an inevitable trend. Because digital transformation will help improve efficiency, reduce operating costs, improve performance, and enhance the quality of business products. However, digital transformation in businesses in general still faces many challenges. Internal challenges of enterprises such as human resource quality, digital technology, and investment costs are factors that affect the speed of digital transformation of enterprises. External factors are those that affect the vision and methods for enterprises to survive and develop, especially institutional quality. Institutional factors interact and affect the digital transformation process in enterprises. Therefore, this study aims to assess the importance and interrelationship between institutional quality factors of digital transformation in foreign-invested enterprises in Ho Chi Minh City using the Dematel method. The study found that regulatory quality and political stability are very strong influences that determine the speed of digital transformation in foreign-invested enterprises, while voice and accountability are less important factors and are influenced by other criteria.

1. INTRODUCTION

Many countries in the world are focusing on developing the digital economy. Because developing a digital economy is considered a core solution in countries aiming for rapid and sustainable development. Each country has a different digital economic development strategy, depending on the specific characteristics of each country and the actual potential of the business community, especially foreign-invested enterprises. Although the number of enterprises in this group often accounts for only a small proportion of the total number of enterprises in an economy, these enterprises are often large-scale, have abundant capital and employ a lot of labor to participate in the production process of the national economy. On the other hand, to have an economy that operates on a digital platform requires both breadth and depth of investment in digital technology. Meanwhile, waiting for limited public capital will take a lot of time, slowing down and losing opportunities for economic development on a digital platform. Therefore, building a good quality institution will become a driving force for businesses to proactively invest in implementing a digital transformation strategy.

Vietnam is considered one of the countries with a fairly fast digital economic growth rate in the ASEAN region with good telecommunications and information technology infrastructure, wide coverage, and high user density. (UNCTAD, 2019). The Vietnamese Government has also approved the "National Digital Transformation" program since 2020, with many policies and support measures to promote the boldness of businesses to participate in the digital economy. However, that is only a necessary condition, an essential foundation for businesses to decide to invest in digital transformation and improve business efficiency. The sufficient condition for businesses in general, especially foreign-invested enterprises with strong financial resources, to be ready to carry out digital transformation is the institution in the host country. An institution that ensures legal ownership, quality of regulations, controls corruption as well as ensures long-term stability will be the deciding factors for investing in digital transformation in businesses.

In Vietnam in general and Ho Chi Minh City in particular, foreign-invested enterprises play an important role in the economy by providing capital, transferring technology, creating jobs, promoting exports and contributing to GDP growth. Therefore, to

promote enterprises in general, especially foreign-invested enterprises, to invest in digital transformation, the Government has issued regulations such as Decision No. 749/QD-TTg dated June 3, 2020 of the Prime Minister: Approving the National Digital Transformation Program to 2025 and orientation to 2030; Resolution of the 13th National Party Congress issued many contents on digital economic development, emphasizing the role of cognitive transformation as the most important, determining the progress and effectiveness of digital transformation. In fact, many enterprises, despite having financial potential, have not really paid attention to investing in digital transformation. There are many reasons for this situation, including institutional reasons. Therefore, the research objective is to assess the impact of constituent factors on institutional quality by determining the importance of factors and the relationship between them on digital transformation of foreign-invested enterprises in Ho Chi Minh City through the use of the Dematel method.

2. THEORETICAL FRAMEWORK

Institutions are the rules of the game in society, the constraints set by people to shape relationships between people (North, 1990). Institutional theory has been developed by researchers in many directions, of which the two most popular directions are institutions from an economic perspective (economic institutions) and institutions from a social perspective (social institutions). Economic institutions include property rights, contracts and contract enforcement, as well as conditions that promote contract enforcement, etc. A high-quality economic institution will impact the structure of economic incentives in society, creating incentives for digital transformation investment in enterprises, contributing to improving economic growth efficiency. Therefore, the quality of formal economic institutions will affect the competitiveness, innovation and long-term investment activities of enterprises.

However, institutional quality is a broad concept that involves the rule of law, individual rights, and the provision of government regulations and services (Barbier & Burgess, 2021). With the purpose of guiding economic activities, economic institutions also help allocate resources to the most effective use. A high-quality institution will help reduce transaction costs, encourage investment and innovation. Many studies have shown the relationship between the quality of economic institutions and prosperous and sustainable economic development. However, inclusive institutions will encourage businesses to expand investment and innovation in the long term, while exclusive institutions increase inequality, poverty and instability, causing confusion and anxiety among investors. (Trần, 2014).

From an economic perspective, digital transformation and technological innovation are investments that consume a large amount of capital for businesses. However, there is currently no unified concept of digital transformation. From a digital technology application perspective, digital transformation is the changes that digital technology brings to transform organizational structures and automate work processes (Clohessy et al., 2017). From a post-digital perspective, digital transformation is a post-digital development process in which organizations respond to environmental changes by using technology to create new value (Morakanyane et al., 2017). From a general perspective, digital transformation is a process in which participating entities in an organization are transformed and a new organizational model is formed from that transformation (Ulas, 2019).

The perspective of digital transformation and technological innovation in enterprises is a process mentioned by many researchers. To analyze the process of implementing technological innovation in an enterprise, DePietro, Wiarda and Fleischer (1990) proposed through the theoretical framework TOE (Technology - Organization - Environment)(Depietro et al., 1990). The technological context includes characteristics directly related to the nature of the technology, such as availability, compatibility, complexity, relative advantage, and ease of use. The organizational context reflects internal factors such as size, management structure, work culture, backup resources, and leadership support. Among them, the level of “organizational readiness” and “top management support” are key factors determining the ability to apply technology. In addition, the environmental context refers to external factors such as competitive pressure, industry characteristics, technical infrastructure, as well as policies and regulations. These factors from the external environment can both motivate and become barriers to the process of technological innovation of enterprises.

3. LITERATURE REVIEW

Institutional reforms such as improving market information, property rights, and supporting labor training have positive impacts on business performance, while shortcomings in the judicial system and administrative reforms are major obstacles to the development of non-state enterprises (Tran et al., 2009). In addition, pressure from state-owned enterprises and domestic market orientation affect the investment form of foreign enterprises (Meyer & Nguyen, 2005). Tuy nhiên, với những doanh nghiệp nhỏ những lo ngại về bảo mật thông tin và sự hạn chế về trình độ công nghệ là những trở ngại trong quyết định thực hiện chuyển đổi số (Abel-Koch et al., 2019). Bên cạnh đó, việc chưa nhận thức được những rủi ro phát sinh trước, trong và sau quá trình chuyển đổi số, cũng như không biết thực hiện chuyển đổi số như thế nào cũng là những lý do khiến cho các doanh nghiệp chưa thực hiện chuyển đổi số (Nazir et al., 2021; Zastempowski, 2022).

Empirical research has also shown that innovation and application of digital transformation based on information and communication technology within a quality institutional framework can achieve sustainable development goals (ur Rehman & Gill, 2023). For high-tech and non-state enterprises, digital transformation has a greater impact on enterprise production efficiency

regardless of formal or informal institutions (Wang & Shao, 2024). However, the positive impact of institutional quality promotes innovation through three main channels including government effectiveness, regulatory quality, and voice and accountability (D'Ingiullo & Evangelista, 2020). In addition, when examining different regional institutional arrangements, reducing corruption and maintaining the rule of law appear to be most important for corporate innovation (Hussen & Çokgezen, 2021).

Furthermore, for foreign direct investment (FDI) enterprises, which often have large capital, management experience, strategy building, and high-quality technology human resources, the barriers to digital transformation in these enterprises rarely come from internal capacity. Many studies have shown that institutional quality affects the destination of this FDI capital flow. Some studies can be summarized as follows:

Table 1: Some reference journal articles on elements of institutional quality

No.	Authors	Journal
1	(Kapuria-Foreman, 2007)	Economic freedom and foreign direct investment in developing countries
2	Saha and Sen (2021)	The corruption–growth relationship: does the political regime matter?
3	Lee et al. (2014)	Legal system pathways to foreign direct investment in the developing world
4	Li, Q., & Resnick, A. (2003)	Reversal of Fortunes: Democratic Institutions and Foreign Direct Investment Inflows to Developing Countries
5	(Berggren et al., 2012)	The growth effects of institutional instability
6	Jensen (2008)	Political risk, democratic institutions, and foreign direct investment
7	Jensen (2003)	Democratic governance and multinational corporations: Political regimes and inflows of foreign direct investment
8	Henisz (2000)	The institutional environment for multinational investment

Source: Web of Science

From an overview of the reputable research found, the author synthesizes the factors that make up the institutional quality that can influence the decision to implement digital transformation in foreign-invested enterprises. Researching within the scope of enterprises in Ho Chi Minh City, the author proposes the following factors:

Table 2: Institutional quality factors affecting digital transformation in enterprises

Label	Institutional quality	Description
C1	Control corruption	Control of corruption involves the perceived extent to which public power is exercised for private gain, including both petty and grand forms of corruption in government and society.
C2	Voice and accountability	Voice and accountability include the extent to which a country's citizens can participate in choosing their government, as well as freedom of speech and freedom of the press.
C3	Political stability	Political stability measures perceptions of the likelihood of political instability and/or politically motivated violence, including terrorism.
C4	Rule of law	The rule of law includes the extent to which members of a society trust and comply with society's rules, especially the quality of contract enforcement, property rights, police and courts, as well as the likelihood of crime and violence.
C5	Government effectiveness	Government effectiveness includes perceptions of the quality of public services, the quality of civil service and the degree of independence from political pressure, the quality of policy formulation and implementation, and the credibility of the government's commitment to those policies.
C6	Quality regulations	Regulatory quality encompasses perceptions of the government's ability to formulate and implement sound policies and regulations that enable and promote the development of the non-state economic sector.

Source: Author's synthesis

After the criteria were compiled and explained in detail, the study conducted interviews with experts and managers at foreign-invested enterprises in Ho Chi Minh City to assess the appropriateness of the criteria. The research results were accepted by experts and managers.

4. METHODOLOGY AND DATA

The research method used in this paper is the DEMATEL (Decision-Making Trial and Evaluation Laboratory) method, which was first developed at the Battelle Memorial Institute in Geneva during the period 1972–1976 (Fontela & Gabus, 1976). It is an expert opinion based technique used to analyze and solve complex management problems in quantitative research (Wu & Chang, 2015). The core of this method is to identify the relationships between criteria in a system through a structural model and graphical representation. This graph helps to show the causal relationships between criteria, thereby identifying the most important factors that form the basis for expert-based decision making (Shieh & Wu, 2016).

After identifying the factors affecting the dependent variable, the DEMATEL method implementation process usually begins with collecting expert opinions to build a matrix of direct relationships between the criteria in the system. Then, the average matrix is built:

$$A = [a_{ij}]_{nxn} = \frac{1}{H}\sum_{i=1}^{H}[X_{ij}^{k}]_{nxn}$$

In which: H: number of experts, $X^k = [X_{ij}^k]_{nxn}$ is the matrix obtained from the k^{th} expert ($1 \leq k \leq H$) describes the degree of relationship between factor i and factor j. A is a square matrix of order n×n. It is also known as the original direct relationship matrix. Expert survey assesses the level of influence of institutional quality factors on the acceptability of digital transformation in foreign-invested enterprises according to the level assessment scale. In which, "0 = no influence"; "1 = low influence"; "2 = medium influence"; "3 = strong influence"; "4 = very strong influence". The survey results table of each expert will be set up in the form of a square matrix n x n. In which, n is the number of observed variables, the number of survey participants is the number of matrices set up. According to James, F. R. (1988), the number of experts needed to participate in the best opinion gathering is 8 people. Meanwhile, Qureshi et al. (2008) suggested that the number of experts should be from 5 to 15 people for a study. In this study, 9 experts who were regional directors or above were included in the survey list.

From the mean matrix, the normalized matrix and the generalized relationship matrix are calculated. It helps to identify their effects as well as their causal roles in the system. Finally, these relationships are represented on the relationship map. In which, the higher the horizontal axis value (r+c), the more that criterion affects other criteria and vice versa. The higher the vertical axis value (r-c), the more that criterion is affected by other criteria (also known as result criteria). The plane of the relationship map is divided into four regions: (1) the upper right region represents criteria that are both important and influential, the "active" criteria; (2) the upper left region represents criteria that are important and more influenced by other criteria; (3) the lower left region represents criteria that are less important and more influenced by other criteria; (4) the lower right region represents criteria that are less important and have more influence on other criteria.

5. RESULTS

Based on the survey results of 9 experts, we have the following average matrix results:

$$A = \begin{bmatrix} 0{,}000 & 0{,}889 & 2{,}222 & 1{,}222 & 2{,}667 & 0{,}778 \\ 1{,}778 & 0{,}000 & 1{,}222 & 0{,}556 & 2{,}889 & 0{,}778 \\ 1{,}333 & 0{,}667 & 0{,}000 & 2{,}000 & 1{,}111 & 3{,}000 \\ 3{,}444 & 2{,}000 & 3{,}667 & 0{,}000 & 1{,}111 & 3{,}000 \\ 2{,}333 & 1{,}222 & 2{,}111 & 0{,}667 & 0{,}000 & 1{,}667 \\ 3{,}000 & 2{,}667 & 3{,}000 & 2{,}778 & 2{,}889 & 0{,}000 \end{bmatrix}$$

Normalization matrix (matrix D): Calculate the original direct relationship matrix D normalized by the formula D = A x s. Where:

$$s = \frac{1}{Max_{1 \leq i \leq n} \sum_{j=1}^{n} a_{ij}}$$

We have the normalized matrix from the initial direct relation as follows (D)

$$D = \begin{bmatrix} 0{,}000 & 0{,}062 & 0{,}155 & 0{,}085 & 0{,}186 & 0{,}054 \\ 0{,}124 & 0{,}000 & 0{,}085 & 0{,}039 & 0{,}202 & 0{,}054 \\ 0{,}093 & 0{,}047 & 0{,}000 & 0{,}140 & 0{,}078 & 0{,}209 \\ 0{,}240 & 0{,}140 & 0{,}256 & 0{,}000 & 0{,}078 & 0{,}209 \\ 0{,}163 & 0{,}085 & 0{,}147 & 0{,}047 & 0{,}000 & 0{,}116 \\ 0{,}209 & 0{,}186 & 0{,}209 & 0{,}194 & 0{,}202 & 0{,}000 \end{bmatrix}$$

Calculate the general influence matrix (T) using the formula: $T = D.(I - D)^{-1}$, In which, I is the identity matrix.

$$T = \begin{bmatrix} 0{,}225 & 0{,}202 & 0{,}371 & 0{,}228 & 0{,}364 & 0{,}245 \\ 0{,}311 & 0{,}127 & 0{,}286 & 0{,}169 & 0{,}364 & 0{,}216 \\ 0{,}359 & 0{,}228 & 0{,}286 & 0{,}312 & 0{,}318 & 0{,}403 \\ 0{,}579 & 0{,}369 & 0{,}611 & 0{,}264 & 0{,}427 & 0{,}494 \\ 0{,}373 & 0{,}228 & 0{,}372 & 0{,}206 & 0{,}220 & 0{,}295 \\ 0{,}577 & 0{,}417 & 0{,}593 & 0{,}431 & 0{,}539 & 0{,}331 \end{bmatrix}$$

Source: Author's data analysis results

The relationship map is constructed with the assumption: Suppose *r* and *c* are *n* x 1 and 1 x *n* vectors representing the sum of rows and the sum of columns of the relationship matrix T. We call r_i the total influence including direct and indirect influences caused by the i-th factor; c_j is the total influence, including both direct and indirect influences on the j-th factor from other factors. When i = j, the sum ($r_i + c_j$) represents the importance of factor i. Meanwhile, the difference ($r_i - cj$) represents the causal relationship of the factors. In case ($ri - cj$) > 0, factor i is the cause factor; and ($ri - cj$) < 0, factor i is the effect factor. The results of data analysis show the relationship map in Table 3:

Table 3: Relationship map

Criteria	c+r	r-c	Result
C1 - Control corruption	4,060	-0,789	effect
C2 - Voice and accountability	3,045	-0,097	effect
C3 - Political stability	4,424	-0,613	effect
C4 - Rule of law	4,356	1,133	Cause
C5 - Government effectiveness	3,926	-0,538	effect
C6 - Quality regulations	4,873	0,904	Cause

Source: Author's data analysis results

To ensure statistical significance, the threshold value is determined as follows: $p = \frac{\sum_{i=1}^{n}\sum_{j=1}^{n} t_{ij}}{N}$

Research results identify threshold values p = 0.3428 and from Table 3 we have the following relationship diagram:

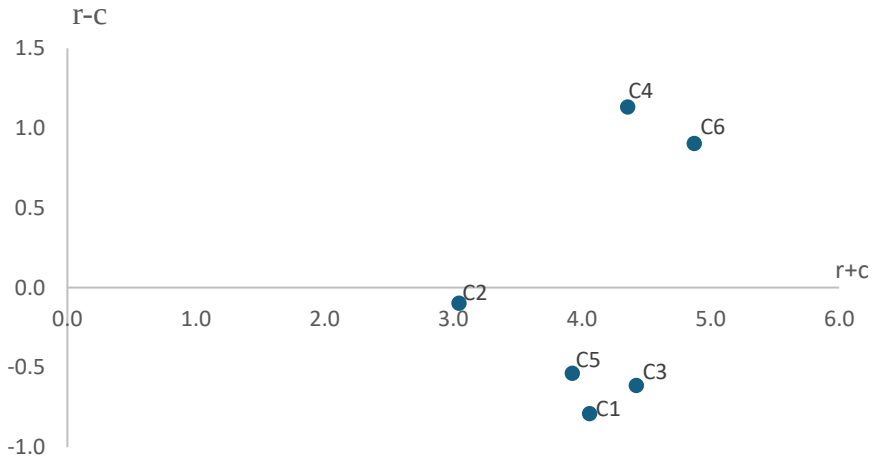

Figure 1: **Relationship map between factors of institutional quality and digital transformation in foreign-invested enterprises in Ho Chi Minh City**

The analysis results in Table 3 show that concerns about institutional quality (C6) are the most worrying; followed by political stability (C3), rule of law (C4), control of corruption (C1) and government effectiveness (C5) are factors of decreasing importance. Meanwhile, voice and accountability (C2) are factors that foreign-invested enterprises consider unimportant when transforming digitally. Also from Table 3, the results show that rule of law (C4) and institutional quality (C6) are the causes that greatly affect other factors. Of which, institutional quality (C6) is the causal factor, having the strongest impact on other factors on institutional quality. And leading to the consequence that the factor most strongly affected is factor (C1) - Control of corruption.

Although the quality of regulations (C6) and the rule of law (C4) are "active" factors, Figure 1 shows that the quality of state regulations has a stronger influence and is still capable of influencing the rule of law. Meanwhile, whether the quality of regulations (C6) changes or not is still likely to be affected by political stability (C3) and the rule of law (C4).

6. CONCLUSION AND SUGGESTIONS

The study was conducted to assess institutional quality factors on the ability to implement digital transformation at foreign-invested enterprises in Ho Chi Minh City. The research results show that concerns about the quality of regulations and the rule of law have a strong impact and are likely to cause other concerns of foreign-invested enterprises in Ho Chi Minh City when deciding whether to implement digital transformation or not. The next research direction needs to expand the research sample, analyze the complex relationships between factors. There are many other reasons why enterprises are not ready to implement digital transformation such as technology availability, organizational management capacity, as well as environment and infrastructure. In addition, differences in the quality of government regulations may explain some of the differences, so it is necessary to study the response of regulatory quality to the implementation of digital transformation in enterprises to make appropriate adjustments, and studying the influence of political stability factors on the ability to implement digital transformation is necessary for further research.

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